AUTHOR INDEX

Acartürk, Esmeray 775
Adam, Bahattin 427
Ahn, Young Keun 79
Aikawa, Masanori 803
Aikawa, Shizu 239
Aizawa, Yoshifusa 87, 281, 471, 665
Akdemir, Ilyas 703
Aksoy, Mehmet 703
Altinyay, Erkan 715
Altunkeser, Bülent 503, 715
Alvur, Muhlise 427
Aono, Hiroshi 65
Apakkan, Saliha 729
Arima, Shinichi 109
Arisawa, Jun 755
Ashizawa, Naoto 461
Aşker, Müntecep 599
Atsumi, Naotaka 239
Aydoğdu, Sinan 405, 831
Azuma, Akihiro 783

Banzer, Winfried 45
Bayindir, Oya 267, 729
Bedir, Abdulkerim 427
Bello, Mercedes Castro 65
Bilge, Mehmet 599, 703
Biro, Sadatoshi 109
Boydak, Bahar 267, 729

Carasi, Massimo 295
Cardaioli, Paolo 295
Chang, Kuan-Cheng 481
Chang, Mau-Song 535, 571
Chang, Nen-Chung 155
Chen, Ching-Iuan 535
Chen, Jan-Yow 481
Chen, Jaw-Wen 535, 571
Chen, Ying-Hwa 535, 571
Chiang, Cheng-Wen 365, 369
Chiang, Fu-Tien 391
Chiang, Shao-Yueh 369
Chida, Kouji 233, 509
Chinushi, Masaomi 87, 471, 665
Chioin, Raffaello 295
Cho, Jang Hyun 79
Cho, Jeong Gwan 79
Chou, Hsian-Tai 481
Chu, Po-Hsien 369
Çilli, Aykut 23
Çiçek, Dilek 831

Daida, Hiroyuki 791
Daikoku, Satoshi 11
Dalla-Volta, Sergio 295
Demir, Mesut 775
Ding, Yu-An 535, 571
Doi, Kagumi 579
Durmaz, Tahir 715

Emi, Mitsuru 435, 443
Emre, Ayse 703
Enjoji, Yoshihisa 561
Enomoto, Yoshiharu 239
Eraslan, Turali 405
Erbaş, Deniz 335
Ersek, Birsen 703
Eryonucu, Beyhan 599
Eto, Fumihiko 119

Frey, Bernhard 321
Fujii, Kozo 127
Fujiki, Akira 671
Fujino, Takehiko 189, 351
Fujito, Tsuneo 135
Fukui, Ei-ichi 227, 489
Fukumoto, Nobuhisa 109
Fukutomi, Tatsuya 549
Furushima, Hiroshi 665
Furuuchi, Keiji 199

Goh, Yasumasa 791
Gomi, Seigo 497
Goto, Akitomo 549
Goto, Atsuo 209
Goto, Yoichi 11
Graf, Kristof 461
Göksel, Siber 503, 715
Göktekin, Ömer 703
Gölbaşi, Zehra 405, 831
Güler, Niyazi 599

Güner, Inci 267
Gürsürer, Metin 703

Habif, Sara 729
Hamasaki, Shuichi 109
Harada, Kazumasa 517
Harada, Masahiko 127
Haraguchi, Masahiko 127
Hartter, Engelbert 321
Harumi, Kenichi 677
Hashimoto, Nobuyuki 119
Hatada, Katsuharu 665
Hayami, Noriyuki 227, 489
Hayano, Motonobu 579
Hayashi, Hideki 671
Hayashi, Keisuke 827
Hayashi, Terumi 135
Hiejima, Kazumasa 655
Hiramatsu, Yuji 239
Hirao, Kenzo 655
Hirayama, Tsunenori 435, 443
Ho, Wan-Jing 369
Honma, Hiroshi 31
Hopkins, Paul N. 435, 443
Hori, Motokazu 497
Horikawa, Tomoe 655
Horio, Toru 549
Hosokawa, Hiroaki 549
Hsieh, Hung-Chang 365
Hsu, Kwan-Lih 391
Hsu, Nai-Wei 535, 571
Hsu, Tsu-Shiu 477
Hsueh, Willa A. 461
Hui, Chen 209
Hung, Jui-Sung 481
Hwang, Juey-Jen 391

Ibukiyama, Chiharu 165
Iida, Haruko 91
Iizuka, Kenji 199
Ikeda, Takanori 561
Iliev, Ivan Iliev 579
Inada, Tsuyoshi 549
Inoue, Hiroshi 55, 589, 671
Inoue, Masashi 227, 489, 517
Inoue, Teruo 135
Isabella, Giambattista 295
Ito, Hiroshi 383
Ito, Morio 65
Ito, Shigenori 549
Ito, Susumu 413

Itoh, Akira 11
Itoh, Makoto 549
Iwasaki, Youichi 135
Iwasawa, Kuniaki 91
Izumi, Tohru 281, 683
Izumo, Kazuhide 677

Jeong, Myung Ho 79
Jikuya, Tomoaki 239, 497

Kaftan, H. Asuman 275
Kaftan, Osman 275
Kaji, Yoshikazu 189
Kalaycioğlu, Sedat 335
Kamekou, Masahiro 109
Kamishirado, Hirotoshi 135
Kanadaşi, Mehmet 775
Kanaya, Shozo 189, 351
Kanbara, Hiroji 375
Kang, Jung Chaee 79
Kanzaki, Hideaki 11
Kasai, Hidehiro 87
Kasai, Hirohide 665
Kasaoka, Yuji 227, 489
Katagiri, Takashi 677
Kato, Makoto 645
Katoh, Hirohisa 527
Katoh, Tomitsugu 165
Katsumata, Harumi 435, 443
Kawa-guchi, Hideaki 199
Kawahara, Fumitaka 375
Kawara, Tokuhiro 655
Kawata, Koichi 783
Kaya, Deniz 405
Kepekçi, Yalçin 703
Kida, Kouzui 509
Kido, Keiko 311
Kihara, Koichi 109
Kiliç, Mustafa 275
Kim, Joon Woo 79
Kim, Nam Ho 79
Kim, Sung Hee 79
Kim, Won H. 145
Kimura, Masahiro 127
Kimura, Tohru 791
Kir, Metin 715
Kisacik, Halil L. 503, 715
Kishida, Hiroshi 31
Kitabatake, Akira 199
Kitano, Yoshikazu 281
Kiyonaga, Kazuaki 109

Koch, Horst Josef 45
Kogaki, Shigetoyo 755
Kohno, Hiroyuki 783
Kojima, Koki 645
Kojima, Satoshi 71
Kondo, Masahiko 609
Kondo, Morihiko 783
Kondo, Naoki 561
Kondo, Yuki 413
Korkmaz, Şule 715
Kos, Thomas 321
Kubecova, Lea 321
Kubo, Makoto 127
Kuboki, Kenji 233
Kubota, Isao 179, 383, 621
Kumanlioğlu, Kamil 267
Kunishima, Tomoyuki 119
Kuo, Chi-Tai 477
Kurosawa, Yukie 645
Kurotobi, Shunji 755
Kusama, Yoshiki 31
Köktürk, Oğuz 23
Kütük, Emine 715

Lai, Ling-Ping 391
Lai, Zhi-Yang 155
Lee, Han 481
Leo, Alessandro De 295
Lin, Chih-Ta 365, 477
Lin, Jiunn-Lee 391
Lin, Kuo-Hung 477
Lin, Shing-Jong 571
Lin, Yu-Chin 481
Lo, Huey-Ming 391

Maehara, Kazuhira 339, 629
Magari, Yasuhiro 65
Mar, Guang-Yuan 535
Maruyama, Toru 189, 351
Maruyama, Yukio 339, 629
Mashima, Saburo 1, 451, 609, 819
Masuda, Takashi 683
Matsuda, Masako 127
Matsui, Hiroshi 517
Matsuo, Shuzo 311
Matsushita, Tohru 755
Matsuzaki, Masunori 127
Michihata, Tetsuo 677
Mihara, Wahei 497
Minami, Koichi 645
Mineda, Yoriaki 71
Minezaki, Kenryo K. 827
Mitsugi, Minoru 339, 629
Mitsuhashi, Takeshi 827
Mitsui, Toshio 239, 497, 737
Miyagi, Manabu 165
Miyajima, Hitoshi 413
Miyamoto, Norio 819
Miyao, Mariko 509
Miyasaka, Nobuyuki 655
Miyauchi, Katsumi 791
Miyazaki, Shunichi 11
Mizumaki, Koichi 671
Mizuuchi, Tomoko 509
Mohri, Masahiro 97
Moriguchi, Masahiko 281
Morii, Isao 11
Morita, Toshihiro 91
Morooka, Shigenori 135
Murakami, Takeshi 199
Murakawa, Yuji 227, 489, 517, 745
Murayama, Masahiro 119
Musha, Haruki 119
Mutaf, Işil 267, 729

Nada, Tomomi 413
Nagai, Ryozo 527, 745, 803
Nagasawa, Hidehiko 671
Nagashima, Ryuichi 351
Nagoshi, Hiroshi 209
Naito, Hiroaki 755
Naitoh, Yuichi 165
Nakae, Takeshi 561
Nakagawa, Iwao 471
Nakagawa, Masao 783
Nakajima, Hitoshi 109, 165
Nakajima, Toshiaki 91, 435, 443, 745
Nakano, Fumio 109
Nakao, Shoichiro 109
Nakata, Yasuro 71
Nakaya, Yutaka 413
Narita, Hiroshi 645
Narukawa, Munetoshi 827
Niho, Yoshiyuki 189, 351
Niitsuma, Takeo 339, 629
Nishikawa, Jun-ichi 745
Niwano, Shinichi 281
Nobe, Yukiko 435, 443
Noguchi, Teruo 11
Nomura, Masahiro 413
Nonogi, Hiroshi 11
Noro, Mahito 561

Nunohiro, Tatsuya 461

Ogata, Toru 311
Ogawa, Toshihiro 311
Oğuzhan, Abdurrahman 503, 715
Ohashi, Rikiya 645
Ohhira, Kouji 665
Ohkawa, Shin-ichiro 233, 509
Ohotomo, Kuni 745
Ohtsubo, Kohichiro 509
Ohtsubo, Yoshihiko 311
Oikawa, Keiko 31
Okada, Shintaro 755
Okazaki, Osamu 677
Omata, Masao 209, 227, 489, 517, 745
Ono, Kaoru 127
Ookubo, Michihito 827
Osaka, Motoo 239
Otsuji, Yutaka 145
Ozaki, Takefumi 199
Ozawa, Atsushi 119
Ozawa, Hideki 65
Ozawa, Yukio 247
Özdemir, Kurtulus 503, 715
Özmen, Dilek 267, 729

Pacher, Richard 321
Park, Jong Chun 79
Park, Joo Hyung 79
Park, Woo Suck 79

Rakue, Hiroyuki 165
Ramondo, Angelo 295
Raschka, Christoph 45
Razzolini, Renato 295
Rodoriguez, Aracelis German 65
Ryu, Toshihiro 311

Sağkan, Olcay 427
Saito, Ken 413
Saito, Tomiyoshi 339, 629
Saitoh, Shu-ichi 339, 629
Saitoh, Tsutomu 31
Sakai, Yoshihiko 135
Sakakibara, Yuzuru 239, 497, 737
Sakalli, Murat 831
Sakata, Takao 561
Sano, Tetsuya 755
Sasabe, Masao 209
Sasame, Atsuko 165
Sato, Kiyotaka 683
Sato, Masahiko 339, 629
Sawada, Takahisa 783
Sel ço ki, Yusuf 405
Seto, Shinji 375
Seward, James B. 145
Sezaki, Kazunori 489
Shiga, Ryoko 765
Shigeta, Osamu 239, 497
Shih, Chun-Ming 155
Shimada, Kazuyuki 827
Shimamoto, Ryoichi 745
Shimizu, Tatsuya 517
Shimoike, Eimei 189
Shin, Wee Soo 745
Shiojima, Ichiro 803
Sinci, Volkan 335
So, Takehiko 119
Spinar, Jindrich 321
Stanek, Brigitte 321
Stephenson, Susan H. 435, 443
Suga, Hiroyuki 295
Sugi, Kaoru 561
Sugihara, Hiroki 783
Sugimoto, Tsuneaki 209
Sugishita, Kazuro 517
Sugishita, Yasuyuki 517
Sugiura, Masaya 233
Sumida, Hitoshi 11
Sumiyoshi, Masataka 71
Suwa, Satoru 71
Suzuki, Etsu 91
Suzuki, Fumio 655
Suzuki, Jun-ichi 517, 745, 803
Suzuki, Miwako 199
Suzuki, Shogo 549
Suzuki, Takahiko 549
Suzuki, Toru 527
Suzumura, Hiroshi 549

Tachibana, Hidetada 179, 621
Tada, Toshihiko 127
Tagawa, Minoru 87
Tajima, Shoko 517
Takahashi, Toshiyuki 517
Takami, Mitsuaki 561
Takata, Masanobu 55, 589
Takayanagi, Kan 135
Takeda, Yutaka 549
Takenaka, Katsu 517
Takeno, Masayoshi 375
Takeshita, Akira 97

Takeuchi, Makoto 755
Takubo, Kaiyo 509
Talu, Cengiz 427
Tamagawa, Kazuaki 629
Tamura, Ken 165
Tatlicioğlu, Türkan 23
Tatsukawa, Hirotaka 783
Tei, Chuwa 109, 145
Terada, Yasushi 239
Tezuka, Naoki 561
Toda, Genji 579
Tokushima, Takashi 311
Tomimoto, Shigehiro 549
Tomita, Shin 55, 589
Tomoda, Fumihiro 55
Tomoike, Hitonobu 179, 383, 621
Tonoki, Hidefumi 199
Toyo-oka, Teruhiko 91, 745
Tseng, Chuen-Den 391
Tseng, Yung-Zu 391
Tsuda, Nobuo 375
Tsuda, Yasuo 351
Tsuji, Shinsuke 311
Tsuji, Taeko 745
Tsutsumi, Takeshi 609
Turgan, Nevbahar 729

Uchiyama, Hirohide 471
Ueda, Keiji 233
Ueda, Norihiro 189
Ueno, Hitoshi 55, 589
Usui, Masahiro 671
Usui, Mikio 165
Utsunomiya, Toshinori 311

Vaccari, Diego 295
Vitovec, Jiri 321

Waki, Tomonori 65
Wang, Shih-Pu 535, 571
Wang, Tze-Che 155
Washizuka, Takashi 87, 471, 665
Watanabe, Chizuko 233
Watanabe, Takuya 677
Watanabe, Tetsu 179, 621
Wei, Daming 451, 819
Williams, Roger R. 435, 443
Wimmer, Andreas 321
Wu, Lily L. 435, 443
Wu, Tao-Cheng 535, 571

Yagi, Noriko 209
Yagi, Takakazu 783
Yamachika, Shiro 375
Yamada, Hiroyuki 783
Yamada, Kaoru 209
Yamada, Yoshiaki 549
Yamagami, Shinichiro 791
Yamaguchi, Hiroshi 791
Yamaguchi, Tetsu 561
Yamaguchi, Tsuyoshi 109
Yamaki, Michiyasu 179, 621
Yamashita, Takeshi 227, 489
Yamaura, Masayuki 281
Yamazaki, Tadashi 745
Yanagi, Tetsuo 375
Yano, Katsusuke 375, 461, 579
Yano, Kei 655
Yasuda, Satoshi 11
Yasumoto, Kotaro 55, 589
Yasumura, Seiji 383
Yazaki, Yoshio 489, 803
Yesilçimen, Kemal 703
Yilmaz, Nilgryn 321
Yokoyama, Koichi 383
Yoshida, Kazuyo 311
Yoshitama, Takashi 109
Yoshizawa, Naoto 281

Zoghi, Mehdi 267

SUBJECT INDEX

A

abnormal Q waves 819
accessory pathway 282
accessory pathway in WPW syndrome 451
accessory pathways 481
ACE inhibitor 55
ACE-gene polymorphism 589
activation sequence 179
acute coronary syndromes 729
acute myocardial infarction 383
advanced heart failure 322
airway obstruction 127
ambulatory ECG 135
amiodarone 471
anatomical approach 561
angina pectoris 119
angiogenesis 165
angioplasty 791
angiotensin II 461
angiotensin-converting 645
anisotropic conduction 282
anisotropy 1
ANOVA 45
antiarrhythmic agent 135
anticoagulation therapy 239
antihypertensive drugs 31
antioxidant vitamins 268
antiplatelet agent 79
aortic atherosclerosis 775
aortic disease 527
aortic-banding 645
apolipoprotein 428
artificial heart valve 239
atherosclerosis 765
atrial fibrillation 189, 227, 282, 827
atrial flutter 517
atrial late potential 247
atrial septal defect 145
atrionodal pathway 655
AV nodal reentrant tachycardia 561, 655

B

basic fibroblast growth factor (bFGF) 165
body surface potential map 392
brady-tachycardia syndrome 677
burst 135

C

C-reactive protein 275
Ca^{2+} channel agonist 209
carbon-11 methionine 677
cardiac contraction 339
cardiac fibroblasts 461
cardiac fibrosis 804
cardiac function 645
cardiac hemodynamics 31
cardiac hypertrophy 645
cardiac involvement 509
cardiac sudden death 247
cardioversion 665
catecholamine 683
catheter ablation 561
cDNA cloning 199
chagas' disease 375
chronic heart failure 127
chronic renal failure 91
circadian variation 227
clarithromycin 91
class III antiarrhythmic agents 609
computed tomography 239
computer heart model 451
computer simulation 451, 819
conduction block 179
conduction system 233, 509
continuous-wave Doppler 312
contrast-enhancement 312
coronary angioplasty 12
coronary artery disease 23, 775
coronary artery stenosis 783
coronary blood flow velocity 783
coronary circulation 630
coronary collateral circulation 165
coronary flow reserve 97, 536, 572
coronary heart disease 275
coronary microvascular function 536
coronary pressure-flow relationship 339
coronary restenosis 110
coronary risk factors 65

coronary sinus pressure elevation 339
cyclicity 135
cytomegalovirus 275

D

3D-perfusion/motion map 413
delta wave-like morphology 671
depolarization 621
diagnostic techniques 527
diastolic dysfunction 31
dilated cardiomyopathy 375
dilated phase 579
direct current shock 827
direct PTCA 550
direct vasodilator 55
disopyramide 91, 621
diurnal variation 45
dobutamine 322
dobutamine echocardiography 716
dog heart 339
doppler echocardiography 145, 365
double layer 1
double-chambered right ventricle 517
dynamic 831

E

early afterdepolarization 609
eccentric retrograde atrial activation 655
ECG 45
ECG intervals 45
ECG surface Laplacian 451
ECG surface potential 451
echocardiography 55
effective afterload 296
elderly 155
electrocardiogram 55
electrocardiography (ECG) 746
electromagnetic interference 737
electromotive force 1
electrophysiologic study 282
embryologic pathogenesis 497
endocardial fibrosis 517
endothelial dysfunction 97
enzyme inhibitors 645
epicardial origin 671
essential hypertension 55, 589
europeans 65
exercise test 716
exercise testing 119
exercise tolerance test 127
experimental hypertension 209
extracardiac shunt 369
extracellular matrix 804

F

false-positive response 71
familial hypercholesterolemia 435, 443
fecainide 621
folate 729
free oxygen radicals 268

G

gap phenomenon 489
genetic diagnosis 435, 443
glomerular filtration rate 322
Guinea pig 351

H

HDL cholesterol 65
head-up tilt testing 71
healthy subjects 71
healthy volunteers 45
heart 351
heart failure 630
heart model 819
hemodynamics 322
hepatopulmonary syndrome 369
hyperhomocysteinemia 729
hyperlipoproteinemia 435, 443
hypertension 155
hypertrophic cadiomyopathy 155, 233, 579
hypertrophic cardiomyoathy (HGM) 746
hypoglycemia 91
hypotension 827

I

IgG subtypes 765
implantable cardioverter defibrillator 87, 665
infection 275
integrin 461
interleukins 765
intracerebral hemorrhage 405
intramyocardial pressure 339
intrapulmonary shunt 369
intravascular ultrasound 110
ischemic heart disease 247
isolated interruption of the aortic arch 497

K

K^+-H^+ exchange 351

L

late aneurysm formation 497
LDL receptor 435, 443
left anterior fascicular block 375
left ventricular asynergy 683
left ventricular function 703
left ventricular hyperkinesis 550
left ventricular hypertrophy 31, 55, 589, 804
left ventricular mass 31
leg hematoma 239
lidocaine 621
life-threatening arrhythmia 683
lipid 428
lipophilicity 645
lipoprotein 428
lipoprotein(a) 703
lipoproteins 435, 443
local delivery 791
long-term follow-up 579
long-term prognosis 12
lung cancer 677
LV dysfunction 145

M

macrolide 91
magnetic resonance imaging 737, 755
magnetic resonance imaging (MR imaging) 746
mahaim fiber 481
mapping 179
maze operation 189
microcirculation 630
mitral valve prolapse 572
mobile phone 737
multi-polar potential distribution 392
multiple accessory pathways 489
myocardial anisotropy 819
myocardial blood flow 783
myocardial infarction 165, 550, 703
myocardial ischemia 97, 572
myocardial tagging 755
myocardial viability 703
myosin 527

N

Na^+-H^+ antiport 351
nagative T waves 746
negative potential 392
negative U-wave 31
negroids 65
new long linear probe 189
nifedipine 12
nitric oxide 97, 335, 630
nocturnal oxygen desaturation 23
noninfarcted area 550
normal signal averaged ECG of Japanese 247
nuisances 737

O

omeprazole 351
orthodeoxia 369
osteopontin 461
outflow tract obstruction 831
oxygen consumption 127

P

pacemaker 737
pancreas ATP-sensitive K^+ channels 91
percutaneous transluminal coronary angioplasty 536
pericardial effusion 503
perinodal transitional cell 655
pH regulation 351
phase 3 block 489
phase 4 block 489
phenotypic modulation 804
pheochromocytoma 831
physiological tricuspid regurgitation 312
platelet deposition 791
platypnea 369
polyclonal B-cell 765
positron emission tomography 677
potassium channel opener 609
potential minimum 392
potential operated Ca^{2+} channel 209
primary pulmonary hypertension 145
prognosis 383
prostaglandin E1 322
prostaglandins 630
protamine 335
pseudoaneurysm 365
pulmonary angiography 369
pulmonary arterial pressure 312
pulmonary edema 683
pulmonary vasoconstriction 335
purkinje fibers 233

Q

QT dispersion 119, 405
questionnaire 737

R

R and T wave amplitudes 45
R wave 621
radiation 677
radiofrequency ablation 481
radiofrequency catheter ablation 671
radiofrequency energy 189
radionuclide 716
reentrant ventricular tachycardia 471
reentry 179
regional diastolic motion 755
regional wall motion 550
remodeling 461
renal plasma flow 322
reperfusion 268
reperfusion therapy 383
repolarization 621
reproducibility 71
restenosis 536, 791
reversal potential disitribution 392
reverse frequency dependence 609
ribosomal frameshift 199
right atrial appendage blood flow 599
right bundle branch block 375
right veentricular pressure overload 755
right-side heart failure 517

S

S-1452 791
shortening fraction 413
signal averaged ECG 247
signal averaged ECG form Holter ECG 247
signal averaged P wave 247
signal transduction 199
sildenafil 827
simulation of ECG 1
sleep apnea 23
slow AV nodal pathway 655
slow pathway ablation 655
slow pathway potential 561
smooth muscle 527
smooth muscle cells 791
SPECT 413
spectral analysis 227
splenic artery 365
ST segment 621
stent implantation 110
subarachnoid hemorrhage 683
superior vena cava syndrome 477
supernormal conduction 489
system and gender specific differences of signal averaged ECG 247

T

99mTc-methoxy isobuty1 isonitrile 413
tei index 145
thrombolysis 268
thromboxane A2 receptor antagonist 791
time series analysis 45
torsade de pointes 405
torsades de pointes 233
total aortic arch replacement 497
total cholesterol 65
transesophageal echocardiography 369, 599, 775
transient entrainment 471
transvenous permanent pacemaker implantation 477
triggered activity 609
trypanosoma cruzi 375

U

Uhl's anomaly 503
ultrasonography 239

V

valvular regurgitation 296
vasculo-beh çe t 517
vasodilators 296
venous thrombosis 477
ventilatory equivalent for carbon dioxide 127
ventricular aneurysm 375
ventricular arrhythmia 79
ventricular fibrillation 87
ventricular late potential 247
ventricular premature contractions 135
ventricular remodeling 804
ventricular tachycardia 247, 509, 665, 671
ventricular undersensed beats 87
ventriculoarterial coupling 296
ventriculogrphy 716
vitamin B-12 729

W

Wegener's granulomatosis 509

Wolff-Parkinson-White syndrome 671
WPW syndrome 827

Y

yeast functional assay 199
yeast tow-hybrid 199